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**NEW UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)***(Only for new nonprovisional applications under 37 CFR 1.53(b))*Docket No.
FASV-137-C1Total Pages in this Submission
20**TO THE ASSISTANT COMMISSIONER FOR PATENTS**Box Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

METHOD FOR COOLING A MOTOR IN A BLOWER ASSEMBLY FOR A FURNACE

and invented by:

WILLIAM S. GATLEYIf a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Enclosed are:

Application Elements

1. ☐ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 11 pages and including the following:
 - a. ☐ Descriptive Title of the Invention
 - b. ☒ Cross References to Related Applications *(if applicable)*
 - c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
 - d. ☐ Reference to Microfiche Appendix *(if applicable)*
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings *(if drawings filed)*
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure
3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
 - a. ☐ Formal
 - b. ☒ Informal

Number of Sheets 2

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Application Elements (Continued)

4. ☒ Oath or Declaration
- a. ☐ Newly executed (*original or copy*) ☒ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) (*for continuation/divisional application only*)
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
5. ☐ Incorporation By Reference (*usable if Box 4b is checked*)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Computer Program in Microfiche (*Appendix*)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all must be included*)
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy (*identical to computer copy*)
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☐ Assignment Papers (*cover sheet & document(s)*)
9. ☐ 37 CFR 3.73(B) Statement (*when there is an assignee*)
10. ☐ English Translation Document (*if applicable*)
11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☒ Certificate of Mailing
- ☐ First Class ☒ Express Mail (*Specify Label No.*): EM033419501US
15. ☐ Certified Copy of Priority Document(s) (*if foreign priority is claimed*)

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Accompanying Application Parts (Continued)

16. ☐ Additional Enclosures (please identify below):


Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	2	- 20 =	0	x \$22.00	\$0.00
Indep. Claims	2	- 3 =	0	x \$82.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$0.00
OTHER FEE (specify purpose) _____					\$0.00
TOTAL FILING FEE					\$0.00

- ☐ A check in the amount of _____ to cover the filing fee is enclosed.
- ☐ The Commissioner is hereby authorized to charge and credit Deposit Account No. _____ as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of _____ as filing fee.
 - ☐ Credit any overpayment.
 - ☐ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
 - ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).


Dated: June 20, 2000


Signature

CC:

CERTIFICATE OF MAILING

The undersigned hereby certifies that this paper, along with any paper or document referred to therein as being attached or enclosed, is being deposited with the United States Postal Service via Express Mail, Postage Prepaid, service under 37 C. F. R. § 1.8, addressed to Box: PATENT APPLICATION, Assistant Commissioner for Patents, Washington, D.C. 20231- this 20th day of June, 2000.


Michele M. Bonenfant

jc520 U.S. PTO
09/597448
06/20/00

00000000000000000000000000000000

METHOD FOR COOLING A MOTOR IN A BLOWER ASSEMBLY FOR A FURNANCE

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT WILLIAM S. GATLEY, citizen of the United States of America and resident of Cassville, County of County, State of Missouri and, Fasco Motor Group, the assignee, a corporation of the United States of America and a corporation of Missouri, County of County, State of Missouri, has invented certain new and useful improvements entitled as set forth above of which the following is a specification:

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000230-2446550

1 STATEMENT OF GOVERNMENT INTEREST

2 Not Applicable.

3
4 CROSS-REFERENCE TO RELATED APPLICATIONS

5 A claim of benefit is made to U.S. Provision Application
6 Serial No. 60/140,144 filed June 21, 1999, the contents of which
7 are incorporated herein by reference. This application is a
8 continuation of the provisional application Serial No.
9 60/140,144 entitled, ``80+ Blower and Furnace Venting Method''
10 and filed June 21, 1999, the teachings of which are incorporated
11 herein by reference.

12
13
14 BACKGROUND OF THE INVENTION

15
16 (1) Field of the Invention

17 This invention relates generally to a method for cooling a
18 motor in a blower assembly for a furnace. More particularly,
19 the present invention relates to a method of cooling an electric
20 motor without an auxiliary fan in a blower assembly.

21
22 (2) Description of Related Art

23
24 Typically, many gas-furnaces use induced draft blower
25 assemblies to control flue gas by removing the burnt by-
26 products. These blowers are designed to produce a certain
27 amount of airflow. The motor's shaft extends radially into the

1 blower's housing where an impeller is attached to the motor
2 shaft. The blower housing typically has one inlet and one
3 outlet. Combustion gases are drawn into the housing by the
4 rotating impeller that expels the gases through the outlet into
5 a flue or similar avenue of exit.

6

7 With respect to motor cooling, the gases that are forcibly
8 moved through the housing by the impeller do not come into
9 contact with the motor. Thus, blower activity does not in any
10 way contribute to the cooling of the motor.

11

12 As is known in the state of the art for conventional motor
13 and furnace assemblies, auxiliary fans are provided on the
14 rotating shaft of a blower motor to draw air into the motor
15 housing to cool the motor. The furnace electronics are located
16 in the vestibule area of the motor casing where the air
17 temperature can often reach 150°. The inevitable exposure of the
18 electronics to the vestibule heat shortens the working life of
19 the electronics. Typically vents are provided in the motor
20 housing to allow for the entry and exit of cooling air.

21

22 There are three notable drawbacks associated with the
23 presence and operation of fans in a blower motor assembly.
24 First, the fan inevitably creates drag on the operating motor
25 and reduces motor efficiency with respect to the task of drawing
26 in and expelling exhaust gases from an operating furnace.
27 Second, the fan inevitably generates unwanted noise. Third, the

1 presence of one or more fans increases the overall length of the
2 blower motor assembly. In an effort to solve these numerous
3 related problems, a method for venting the air in a furnace or
4 blower housing assembly has now been achieved that optimizes the
5 intake of combustion air and the expulsion of exhaust gases
6 while providing a ``cool-to-the-touch'' blower housing.

7
8 It is an object of the present invention to provide a
9 method for cooling the motor that eliminates the need for an
10 auxiliary fan. Another object of the invention is to reduce
11 noise levels produced by a blower by eliminating the auxiliary
12 fan. A further object of the invention is to reduce overall
13 blower motor height to allow for more streamlined furnaces. A
14 yet further object of the invention is to provide a means of
15 eliminating heat sources near the electronics in the vestibule
16 portion of a furnace to which the blower is attached. These and
17 other objects are accomplished from the following described
18 blower.

19 20 Summary of the Invention

21
22 This invention relates to a method of cooling a motor in a
23 blower assembly that thereby eliminates the need to have an
24 auxiliary fan to cool the motor.

25
26 According to the invention the assembly blower or motor
27 casing has at least one hole or aperture located anywhere on the

1 motor case to allow for the flow of air into the motor case.
2 The combination of the aperture on the motor case and impeller
3 back plate aperture allows for external air to be drawn into the
4 blower over the motor and into the impeller portion of the
5 blower housing and out an exhaust port situated in the blower
6 housing.

7

8 The new method eliminates the need for an auxiliary fan to
9 cool the motor, thereby, reducing the overall length of the
10 assembly. This method not only provides a motor case that is
11 self cooling but also provides the additional benefit of being
12 cool to the touch. Finally, this method provides for the
13 reduction of noise by the elimination of the fan.

14

15 These and other objects and features of the present
16 invention will be apparent from a review of the drawings and a
17 reading of the following detailed description of the invention.

18

19 Brief Description of the Drawings

20

21 FIG. 1 is a perspective view of a traditional blower
22 assembly with a motor housing according to one embodiment of the
23 invention.

24

25 FIG. 2 is an end view of a motor housing 10 as shown in
26 FIG. 1.

27

FIG. 3 is a perspective view of a motor housing 10 as shown in FIG. 1.

Detailed Description of the Invention

Referring to FIGS. 1-3, a method for cooling a motor in a blower housing assembly for furnaces according to one embodiment of the invention is shown. A motor cover or housing 10 is configured to encompass a motor 12 which comprises a shaft 14, rotor 16 and stator 18. Motor cover 10 has portions that define a shaft bushing 20 and mechanical fastener bores 22 for securing motor 12 to motor cover 10. Motor cover 10 has flanges 24 each of which has portions defining a fastener bore 26 for securing motor cover 10 to a impeller housing 28 which is configured to encompass an impeller 30 which is attached to shaft 14. Impeller 30 is situated in impeller housing 28 such that impeller 30 can freely rotate within said impeller housing 28.

Motor cover 10 has at least one hole or aperture 32 located anywhere on motor cover 10 for drawing in air to cool the bearings (not shown) of the motor 12 in the motor cover 10. In an alternate embodiment, vent aperture 32 can be formed as a plurality of vent slots in other shapes (not shown) or as a combination of apertures.

Impeller 30 has a plurality of fins 34 which provide

1 surfaces for directing incoming air from motor chamber 38 or
2 exhaust gases from an attached furnace. The incoming air from
3 the motor 12 flows through at least one any size hole or
4 aperture 36 located on the back plate 42 of the impeller housing
5 28 from the motor case 10 by the impeller 30.

6
7 The method for venting the air in furnaces according to the
8 foregoing description results in a blower design that eliminates
9 the need for an auxiliary fan (not shown) attached to shaft 14.
10 In this method there is at least one hole or aperture 32
11 situated anywhere in a motor case or housing 10 that allows for
12 air to enter the housing 10 to cool the bearings (not shown) of
13 the motor 12 and the motor 12 itself in the motor case 10. The
14 warm air flows across and around the motor 12 in the direction
15 of the impeller housing 28 and through at least one any size
16 hole or aperture 36 located on the back plate 42 of an impeller
17 housing 28 from the motor case 10 by the impeller 30. An outlet
18 or exhaust pipe 38

19
20 Elimination of an auxiliary fan allows for the reduction
21 in the overall height for the blower housing. This, in turn,
22 allows for a similar reduction in height of a furnace. Coupled
23 with this beneficial effect is the elimination of some of the
24 noise that is inevitably produced by the blower via fan
25 operation. Also maximized is the elimination of the heat source
26 near the furnace electronics that are at least partially
27 contained in the furnace vestibule.

1
2 It is further possible to eliminate much of the heat that
3 is generated in the vestibule of a furnace. Temperatures which
4 typically reach 150°F can be reduced to 90°F by using the novel
5 venting method. The blower can be sealed off to the furnace for
6 fresh air intake. Optionally, the blower can be sealed off to
7 the furnace door to allow for the total sealing of the inducer
8 compartment to maximize blower efficiency. Such a configuration
9 maximizes the drawing of motor heat into the impeller chamber
10 and out an outlet pipe 38 which is in fluid communication with
11 the impeller housing 28. Also maximized is the elimination of
12 the heat source near the furnace electronics which are at least
13 partially contained in the furnace vestibule.

14
15 Numerous alternatives and embodiments exist for the
16 invention such as modifications of the motor housing geometric
17 configuration, integral versus modular motor cover and impeller
18 housing, single large vent aperture versus a plurality of vent
19 slots in the motor cover.

20
21 It is to be understood that the present invention is by no
22 means limited to the particular constructions herein disclosed
23 and/or shown in the drawings, but also comprises any
24 modifications or equivalents within the scope of the claims.

1 Having thus described my invention, what I claim as new and
2 desire to secure by United States Letters Patent is:

3
4 1. A method of cooling the bearings of a furnace motor that
5 drives an impeller comprising:

6
7 rotating the impeller to draw air through a vent in a motor
8 housing whereby the air flows around the motor
9 situated within the motor housing into the direction
10 of an impeller housing to cool the motor bearings
11 thereby eliminating the need of a separate auxiliary
12 fan;

13
14 drawing air from the motor housing through a hole or
15 aperture situated anywhere in the impeller back plate;

16
17 removing air from the impeller housing via an exhaust port
18 situated in the impeller housing.

19

20

21 2. A furnace motor comprising:

22

23 a motor in a housing;

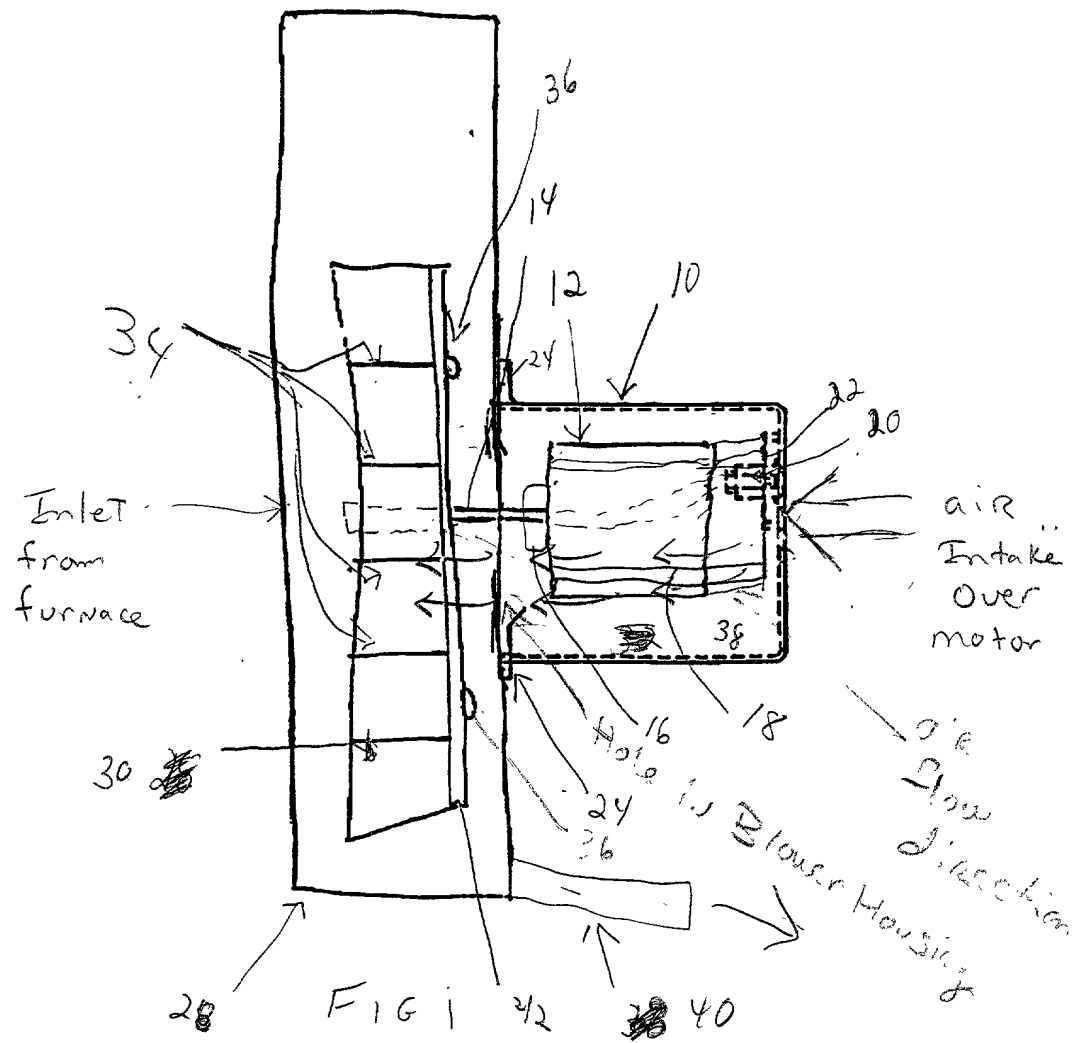
24

25 a vent in the housing to allow air to flow over the motor;

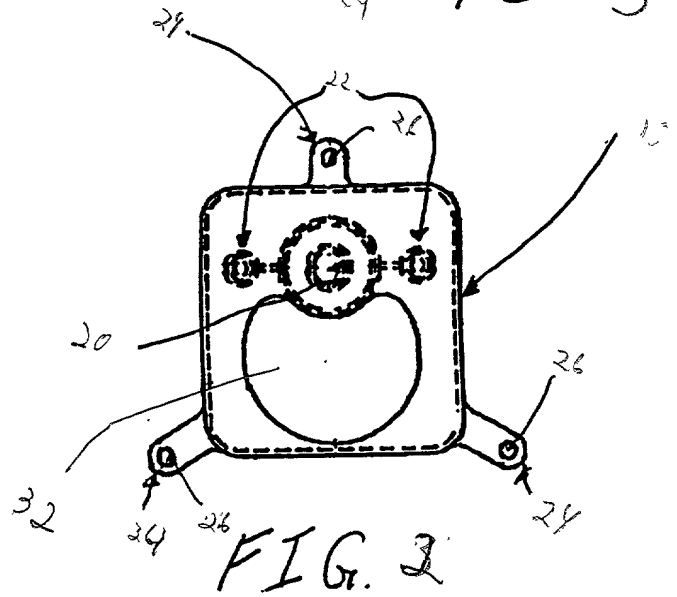
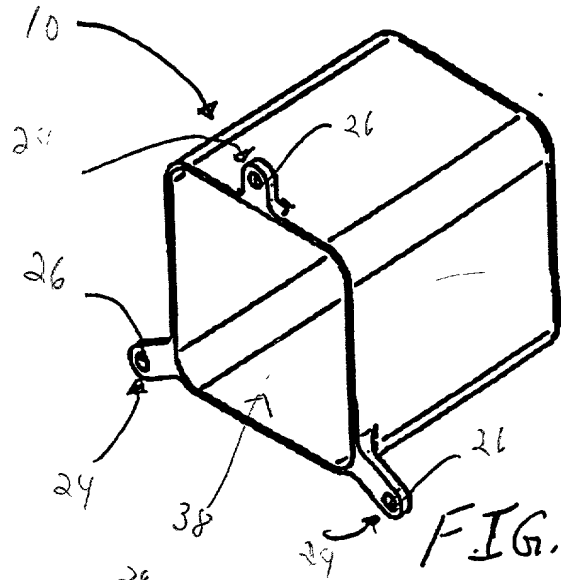
26

27 an impeller connected to the motor by a motor shaft, said

1 impeller being enclosed in an impeller housing, said
2 impeller housing having an inlet port connected to
3 said motor housing, and an exhaust port for the
4 removal of the combustion gases that are drawn into
5 the housing by the rotating impeller.

[illegible]

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Docket No.

FASV-137

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD FOR COOLING A MOTOR IN A BLOWER ASSEMBLY FOR A FURNACE

the specification of which

(check one)

☒ is attached hereto.

☐ was filed on _____ as United States Application No. or PCT International Application Number _____ and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

(Number)

(Country)

(Day/Month/Year Filed)

☐

(Number)

(Country)

(Day/Month/Year Filed)

☐

(Number)

(Country)

(Day/Month/Year Filed)

☐

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

60/140144

June 21, 1999

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112. I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

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Full name of second inventor, if any	Date
Second inventor's signature	
Residence	
Citizenship	
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